

WHAT IS CLAIMED IS:

- 1           1.     A pump comprising:
  - 2                 a housing;
  - 3                 a pump inlet;
  - 4                 a pump outlet;
  - 5                 a drive shaft provided within the housing; and
  - 6                 multiple stages provided within the housing, each stage
  - 7     further comprising:
    - 8                     a body further comprising:
      - 9                         a fluid inlet;
      - 10                         a fluid outlet; and
      - 11                         an interior volume between the fluid inlet and
      - 12     the fluid outlet;
      - 13                     an impeller provided in the interior volume and coupled
      - 14     to the drive shaft;
      - 15                     a vent allowing fluid communication between the
      - 16     interior volume and a volume outside of the body.- 1           2.     The pump of Claim 1, wherein the body further comprises:
  - 2                 a central wall dividing the interior volume into a first volume
  - 3     and a second volume, wherein the central wall further comprises:
    - 4                     a central aperture provided in the wall; and
    - 5                     at least one aperture spaced radially outward from the
    - 6     central aperture.
- 1           3.     The pump of Claim 2, wherein the central wall further
  - 2     comprises vanes adapted to direct fluid from the at least one aperture
  - 3     radially inward toward the central aperture.

1           4.     The pump of Claim 3, wherein the body includes  
2                     at least five vanes; and  
3                     at least five apertures spaced radially outward from the  
4     central aperture.

1           5.     The pump of Claim 3, wherein the body further comprises:  
2                     a first wall provided on a first side of the central wall;  
3                     a second wall opposite the first wall, and provided on a  
4     second side of the central wall;  
5                     wherein the drive shaft extends through the first wall and the  
6     second wall.

1           6.     The pump of Claim 5, wherein the fluid inlet is provided in  
2     the first wall, and the fluid outlet is provided in the second wall.

1           7.     The pump of Claim 6, wherein the drive shaft extends  
2     through the fluid inlet and the fluid outlet.

1           8.     The pump of Claim 2, wherein the drive shaft extends  
2     through the central aperture.

1           9.     The pump of Claim 9, wherein the central aperture is  
2     substantially sealed against fluid flow, but allows rotation of the drive  
3     shaft relative to the body.

1           10.   A pump comprising:  
2               a pump casing;  
3               a shaft provided within the pump casing;  
4               a plurality of fluid handling units wherein at least one fluid  
5 handling unit comprises:  
6                   a housing;  
7                   a wall provided within the housing, the wall having a  
8 first surface and a second surface, the wall separating the housing into a  
9 first volume associated with the first surface and a second volume  
10 associated with the second surface, the wall configured to allow the  
11 passage of a fluid from the first volume to the second volume;  
12                   a vent provided in the housing, the vent being in fluid  
13 communication with the first volume or second volume, and a volume  
14 external of the housing;  
15                   an impeller disposed in the first volume, the impeller  
16 being coupled to the shaft.

1           11.   The pump of Claim 10, wherein the vent is a notch.

1           12.   The pump of Claim 10, further comprising a plurality of  
2 vanes provided in the second volume, the vanes being adapted to direct  
3 the flow of fluid between the first and second volumes.

1           13.   The pump of Claim 12, wherein the plurality of vanes are  
2 provided on the second surface.

1           14.   The pump of Claim 10, wherein the at least one fluid  
2 handling unit is a lower pressure fluid handling unit.

1           15.   The pump of Claim 10, wherein the lower pressure fluid  
2 handling unit is a first stage in the pump.

1           16.    A method of repairing a pump, the pump having a relatively  
2   low pressure fluid handling module, and a relatively high pressure fluid  
3   handling module, the low pressure module and the high pressure module  
4   each having an outer casing, the method comprising:  
5                venting the outer casing of the low pressure fluid handling  
6   module.

1           17.    The method of Claim 16, wherein venting the outer casing  
2   further comprises providing a notch in the outer casing.

1           18.    The method of Claim 17, wherein providing the notch further  
2   comprises drilling a hole in the outer casing.

1           19.    The method of Claim 16, wherein venting the outer casing  
2   further comprises replacing the low pressure fluid handling module with a  
3   fluid handling module having a vent.

1           20.    A module for use in a fluid handling system, the module  
2 comprising:  
3               a housing;  
4               a wall provided within the housing having a first surface and  
5 a second surface, the wall separating the housing into a first volume  
6 associated with the first surface and a second volume associated with the  
7 second surface, the wall configured to allow the passage of a fluid from  
8 the first volume to the second volume; and  
9               a vent provided in the housing, the vent in communication  
10 with either the first volume or second volume, and a volume external of  
11 the housing.

1           21.    The module of Claim 20, wherein the vent is a notch.

1           22.    The module of Claim 20, further comprising a plurality of  
2 vanes provided in the second volume, the vanes being adapted to direct  
3 the flow of fluid between the first volume and second volume.

1           23.    The module of Claim 22, wherein the plurality of vanes are  
2 provided on the second surface.

1           24.    The module of Claim 20, wherein the first volume is  
2 configured to receive an impeller.

1           25.    The module of Claim 20, further comprising a first plate  
2 coupled to a first end of the housing, the first plate associated with the  
3 first volume.

1           26.    The module of Claim 25, further comprising a second plate  
2 coupled to a second end of the housing, the second plate associated with  
3 the second volume.

1           27.    The module of Claim 20, further comprising a second plate  
2    coupled to a second end of the housing, the second plate associated with  
3    the second volume.